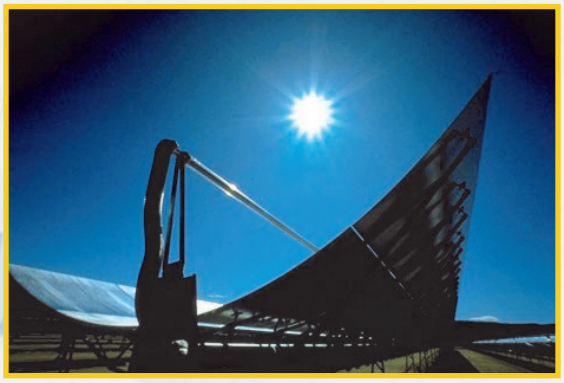
Automated Solar Field Mirror Cleanliness Measurement System

Summary

Sandia has developed an automated solar field mirror cleanliness system. Concentrating solar power (CSP) systems use mirrors to collect and concentrate direct normal solar radiation. The frequency of mirror cleaning becomes an economic tradeoff between the increase in collected solar radiation and the cost of cleaning.



This technology embeds sensors in mirrors to automatically transmit data on cleanliness. It is subsequently analyzed to determine reflectivity loss caused by dirt. This approach is expected to be more accurate and lower cost than traditional manual data collection which requires numerous field measurements, manpower, and locations. The traditional approach is also prone to natural human variability which can reduce accuracy of measurements. Numerous sensors would be installed throughout the field to provide an accurate representation of mirror cleanliness.

BENEFITS

- Automated data collection method
- Increases efficiency & accuracy of CSP systems
- Standardizes measurements which may be prone to human variability
- Significantly improved performance
- Reduced cost for data collection

APPLICATIONS

- Electric Utility
- Solar Energy Applications

SD#

- 11751

Licensing & Partnering Status:

Various license and partnering options are available. Please contact the Intellectual Property department to discuss.

Technology Readiness Level:

This technology is in the early stages of development but is intended to operate as intended in calculations and estimations.

INTELLECTUAL PROPERTY & LICENSING CONTACT

Virginia Cleary
505.284.8902
vdclear@sandia.gov

National Nuclear Security Administration

Sandia is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.
SAND #2010-5245P

Sandia National Laboratories